

CLAIMS:

- 5 1. A diesel (compression ignition) engine having combustion management means and an exhaust gas aftertreatment system without a NO_x trap, which system comprising a platinum group metal (PGM) catalyst liable to be poisoned by fuel sulfur to cause significant degradation of catalyst performance, which engine is fuelled, at least intermittently, by a diesel fuel containing such levels of sulfur as to cause poisoning of the catalyst, wherein the combustion management means is effective to modulate the air/fuel ratio (λ) to 0.90, preferably 0.95, or richer to provide a series of peak
- 10 enrichments for a time which is in aggregate sufficient to cause release of significant quantities of sulfur-containing species from the catalyst or catalyst components, and wherein each regeneration is for 10 seconds to 10 minutes, whereby the catalyst is regenerated.
- 15 2. An engine according to claim 1, wherein the combustion management means is effective to cause pulses of air/fuel ratio modulation of from 250 milliseconds to 5 seconds in duration within each regeneration event.
- 20 3. An engine according to claim 1 or 2, wherein the catalyst is an oxidation catalyst.
4. An engine according to claim 3, incorporating "common rail" fuel injection, programmed to provide in at least one cylinder, such a quantity of fuel post combustion in the main power stroke, so as to reach, in the exhaust gases, λ of 0.90 or richer.
- 25 5. An engine according to claim 1, 2, 3 or 4, wherein the catalyst is an oxidation catalyst and the exhaust gas aftertreatment system also includes a particle or soot filter downstream of the catalyst.
- 30 6. An engine according to any preceding claim, wherein it is fuelled with diesel fuel containing at least 250ppm sulfur.
7. A method of regenerating a PGM catalyst poisoned by sulfur in the exhaust gas aftertreatment system of a diesel engine, which system does not include a NO_x trap,

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which method comprising modulating the air/fuel ratio (λ) of the exhaust gases passing through the catalyst, to $\lambda = 0.90$, preferably 0.95, or richer to provide a series of peak enrichments for a time which is in aggregate sufficient to cause release of significant quantities of sulfur-containing species from the catalyst or catalyst components, and wherein each regeneration is for 10 seconds to 10 minutes, whereby the catalyst is regenerated.

8. Method according to claim 7, wherein λ in the exhaust gases is in the range 0.95 to 1.1 during regeneration.

9. Method according to claim 7 or 8, wherein the catalyst is in the temperature range 200-500°C, preferably 350-500°C, during regeneration.

10. Method according to claim 7, 8, or 9, wherein regeneration is carried out using pulses of air/fuel ratio modulation of from 250 milliseconds to 5 seconds in duration.

11. Method according to claim 7, 8, 9 or 10, wherein the exhaust gas is derived from diesel fuel containing at least 250ppm sulfur.

AMENDED SHEET